

# Physiology of sexual reaction in a woman

## ( Fizjologia reakcji seksualnej u kobiety )

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**Abstract** – Introduction. Sexual response consists of many stimuli, physical and mental processes that take place in the body. There are known attempts to use objective methods to measure physiological reactions, but it is practically impossible to measure mental reactions with this method because they are subjective feelings that have an individual character.

Aim of the study. The aim of the study was to present the sexual physiological-psychological reactions of the body.

Selection of materials. The search was conducted in the Scopus database using the terms sexual reaction, female organism, pregnancy 1999-2018. The literature found in the Google Scholar database was analysed for the highest number of quotations. The literature selected in this way was used as the material for this work.

Conclusions. The sexual behaviour of women is influenced by biological, cultural and social factors, among others. These factors have determined that women's sex has manifested itself in different ways over the centuries, and different models of love have been built for a given period of time.

**Key words** - sexual reaction, female body, pregnancy.

**Streszczenie** – Wprowadzenie. Seksualna reakcja składa się z wielu bodźców, procesów fizycznych i psychicznych, które zachodzą w ciele. Znane są próby wykorzystania metod obiektywnych do pomiaru reakcji fizjologicznych, jednak mierzenie tym sposobem psychicznych reakcji jest praktycznie niewykonalne, ponieważ są to subiektywne odczucia, które mają indywidualny charakter.

Cel pracy. Celem pracy było przedstawienie seksualnych reakcji fizjologiczno-psychologicznych organizmu.

Dobór materiału. Poszukiwania przeprowadzono w bazie Scopus używając pojęć *seksualna reakcja*, *organizm kobiety*, *ciąża* 1999-2018r. Znalezione piśmiennictwo w bazie Google Scholar przeanalizowano pod kątem największej liczby cytowań. Tak wyselekcjonowane piśmiennictwo posłużyło za materiał do opracowania niniejszej pracy.

Wnioski. Na zachowanie seksualne kobiet mają wpływ między innymi czynniki biologiczne, kulturowe i społeczne. Czynniki te decydowały, że seks kobiety na przestrzeni wieków przejawia się w odmienny sposób, budowano także odmiennie modele miłości stosowne do danego okresu czasu.

**Słowa kluczowe** – seksualna reakcja, organizm kobiety, ciąża.

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## I. INTRODUCTION

Sexual response consists of many stimuli, physical and mental processes that take place in the body. There are known attempts to use objective methods to measure physiological reactions, but it is virtually impossible to measure mental reactions with this method because they are subjective feelings that have an individual character. Researchers V. Johnson and W. Masters decided in the 70's to try to research. The research sample included 382 women and 321 men. They were analyzed for many thousands of reactions during caresses, masturbation, sex as

well as stimulation of an artificial vagina member. These studies showed the possibility of extending the concept of women's sensory centers. They show that sexual excitement has a physiological-psychological background related to the action of erotic stimuli, including imagination, touch, sight, hearing, smell, taste, which stimulates central and peripheral nerve centers. [1,2] Thanks to these studies it was also possible to get to know the physiological symptoms of excitement: papillae erection, macular-pelvic rash, muscle tension, bust swelling, faster breathing and heart-beat, acorn swelling, etc. Thanks to these discoveries, it has become possible to identify the scientific basis for describing sexual reactions of women. Additionally, a diagram of the cycle of sexual reaction for women and men is shown. According to it, the cycles occur in the following way: excitement phase - plateau phase - peak - relaxation. Further research conducted by Robinson in this matter defined the plateau phase as an integral part of the excitement phase, and the scheme previously in force was reduced to three phases: excitement - peak - relaxation. However, further research on this subject carried out by Helen Singel Kaplan highlighted the inadequacy of this model in relation to women's sexuality, adding a phase - desire - that preceded sexual excitement. [4-6]

Over the years, there have also been other proposals, including a 4-phase model by Masters, Kaplan and Johnson. However, its creation did not close the topic of research on female sexuality, as these models were mainly concerned with the physical sphere, without covering other factors. The answer to these issues appeared in 2001, in the model developed by Rosemary Basson. According to this researcher, the main motivation for female sexuality is not desire at all. Motivated mainly by mental factors, women are more likely to become open to close-ups and become more sensitive to sexual stimuli, which creates excitement [1,7].

Considering the options for appearing outside the sexual motivation, intercourse will depend on many factors, such as relationship and closeness to a partner, sense of security. For this reason, it happens that for women other motivational factors become more important than desire to have an intimate relationship [6,7].

## II. SEXUAL BEHAVIOUR OF PREGNANT WOMEN

The first step in understanding the sexual behaviour of pregnant women is to explain this term. Human behaviour is a dynamic phenomenon that changes over time. It is an

expression of the influence of different needs, tendencies and psychophysical aspirations on people. [8-10] Lew-Starowicz, a well-known Polish sexologist, defines correct sexual behaviors with these words: "any behaviour of heterosexual partners, mutually accepted by them, serving mutual satisfaction, not contrary to the principle of not harming health and the applicable law. A feature of correct sexual behaviour is the ability to simultaneously fulfil a procreative function (procreation), a psychological function (sexual satisfaction) and a social function (creation and consolidation of a partnership)". [1]

According to Imieliński, "sexual behaviour is not an isolated function of the genitals, but an action of personality. Emotions, will, cognitive abilities and character properties are strongly integrated with sexual behavior (...). Integration, on the other hand, makes the sexual experience a factor enriching human development and a bond-forming factor"[10].

It is not an easy task to determine the sexual norms for given behaviours, all the more so because over time there is a lack of unambiguous behaviours that could be universally assessed as normal, as well as behaviours that could be unambiguously qualified as abnormal. [11,12]

Imieliński also believes that "in the creation of sexual norms, which were attempted to subordinate them to moral demands, it was not people's sexual needs that played a fundamental role, but variously understood social and even economic interests"[10].

Legal norms depend on the legal system operating in a given place. Sexual behaviour, in turn, is considered by the medical norm through the prism of health and illness. Regardless of the lack of universality of medical norms, they are binding in the work of sexologists and doctors. They derive from the concept of sexual health of the WHO International Classification of Diseases and Health Problems, the WHO Declaration of Sexual Rights and the UN. The UN International Conference on Population and Development held in Cairo defined a functioning definition of sexual health, saying: "Sexual health is part of reproductive health and consists of healthy sexual development, responsible and equal partner relationships, sexual satisfaction, freedom from disease, sexual impotence, violence, infirmity and other harmful practices related to sexuality". This definition has led to the implementation of changes in the international classification of diseases and health problems of the WHO and a change in attitudes towards sexual health.

In 2002, the WHO announced the Declaration of Sexual Rights, which shows a positive reference to sexuality, successful sex life is considered a health promoting factor and the phenomenon of masturbation is treated as a health

marker. An exceptional period in a woman's life is the time of pregnancy, lasting on average 280 days and starting at conception. Then a lot of biological changes take place, resulting in the right conditions for the child's development and its birth. Biological changes include all areas of life of future mothers - emotional, family, social and personality. Women's pregnancy time also influences their sexuality, which is a complex concept, influenced by cultural and psychosocial factors, and which can be understood through various aspects. Motherhood, expected and unexpected, causes many changes in life, especially when it is the first pregnancy. "Motherhood, fatherhood are elements of human nature, continuation and fulfillment of "masculinity-womanhood". Among the greatest values of human personalities, parenthood is mentioned, it is related to pedagogical (through parenthood the offspring enter into cultural and social life), biological (extension of the species) and psychological (thus satisfying love, purpose, meaning of life and self-fulfilment) reasons. Pregnancy and the resulting parenthood complement and give parents a new meaning to their relationship. The importance of creating a new life influences the way in which future mothers experience and manifest themselves sexually.[9,13]

### III. BIOLOGICAL FACTORS AND PREGNANT SEX BEHAVIOUR

At different stages, women's sexuality is subject to change, influenced by social, biological, cultural or psychological factors, among others. Many different sciences deal with this complex phenomenon of female sexuality. This section will present the biological conditions of sexuality. Although the biological factor of sexuality is most often described, it is still not entirely understandable, because

The sexual arousal of women is by nature more dispersed and more difficult to measure than that of men[14,15].

The biological factor is influenced by hormones, genetics, physiology and sexual anatomy of a woman. The most sensitive place among the anatomical features is the clitoris. New tools provide an opportunity to examine the circulation and reactivity of this part of the body. Modern methods also examine vaginal innervation and its importance on women's sexuality. The Gräfenberga space and Kegel muscles also have an impact on women's sexual stimulation. The examination with the measuring apparatus confirmed the existence of the G-spot, which is used to trigger the contraction of vaginal muscles and anal sphincter. Research on biochemical conditions increased information on

sexual reactivity among women. The formation of sexual stimulation causes the functioning of neurotransmitters at the central and peripheral levels. Acetylcholine, norepinephrine, vasopressin, oxytocin, nitric oxide, opioids and dopamine are important for female sexuality. Moreover, sex hormones are also important and affect [16]:

- activity and increased function of vaginal and clitoral smooth muscles,
- greater sensitivity and blood flow of sexual organs,
- positive influence on the development of synaptic conduction and nerves,
- vaginal lubrication,
- desire, frequency of orgasms, sexual motivation, erotic fantasies,
- normalization of nitric oxide synthesis.

The appropriate concentrations of androgens and estrogens, which also affect the correct level of libido, have an influence on the well-being and mental mood. The male hormone testosterone has an influence on the greater desire for sex, satisfaction and the number of orgasms. When you reach the age of 30, the amount of testosterone decreases, while before the menopause its level is as high as after 20 years of age. Researchers dealing with neuronal regulation of sexual reactivity believe that during sexual stimulation the following brain elements are involved: almond body, hippocampus, base ganglia, rim bark, semi-lying striated nucleus of the brain stem structure, lonely band nucleus, hypothalamic trichomere nucleus.

It has also been shown that there are three ways in which orgasms can occur in women: the first way is nervous, from the peripheral receptors through the spinal cord to the brain, the second way is imaginary, and the third way is nervous, from the cervical and vaginal receptors through the vagus nerve to the brain. Among the conditions and features of a biological nature are the sensitivity to erotic stimuli and erogenous spheres. Culture maintains the view that women are more sensitive than men to tactile and auditory stimuli, while men are more sensitive than the opposite sex to visual stimuli. Studies confirm this stereotype, but at the same time point out that cultural and psychological factors may have an increased feeling of sensitivity. Among all stimuli, scented stimuli are the least significant for human sexuality. Among people with a higher amount of testosterone, scented reactivity is higher. Further stimuli - taste - rarely affect the excitement. Only the taste of a kiss can be affected. Erogenous zones are parts of the body that are highly sensitive to touch and cause sexual excitement. Women have more erogenous zones, where together they occupy about 15% of the whole body, while men only have them in areas from 3-5% of the body. Quantitative

and qualitative differences are noticeable. Female erogenous zones are not in the genital area, which is the case with men. Women are characterized by a high diversity of their favorite stimulations. Among the preferences are: stimuli of different strength, transfer from one zone to another or simultaneous stimulation of many zones. Women are very diverse in this respect. [17]

The following factors, among others, have an influence on stimulus reactivity: hormones, vitamins, blood pressure, microelements, stimulants, location of receptors. The significance of research on biological determinants of feminine features is influenced by the fact that there was a conviction that the mental difference between the sexes is apparent and results only from the type of culture and upbringing, and there is no justification in the biology of the central nervous system. [17-20]

### III. PSYCHOSOCIAL AND CULTURAL FACTORS AND SEXUAL BEHAVIOUR OF PREGNANT WOMEN

The sexual behaviour of women is also influenced by cultural and social factors. These factors have determined that women's sex has manifested itself in different ways over the centuries. Different models of love and sex are also built, appropriate for a given period of time. [21]

The issue of social and cultural conditions affects women much more strongly. This is due to the fact that women's sexuality is influenced by traditions and mechanisms created by religions, civilizations, environmental and national traditions, mass culture, art, literature and legal systems. [22] In the Western civilization, the continuous influence of women's subordination and patriarchy can be seen. A conflict between women's models is also noticeable. Also the influence on sexuality, the needs related to them and women's behaviours are given by existing myths and the image conveyed from an early age in fairy tales and fables. Religion is another strong factor influencing the described phenomenon. Christianity, together with the norms created, has a great influence on sexual behaviour. The research proves that women's sexuality is positively influenced [23-25]:

- satisfactory work,
- education,
- non-existent religious rigor,
- cultural changes that contribute to the equal place of women in society.

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